

Christmas 2022

Cover Photo taken by
Thomas Angus (Imperial College London)

Vol.3

Feeling lost in your career
journey? Turn to Pg. 7 to hear
what Dr. Pini & Prof.
Kontoravdi have to say!

Autumn Issue
part II

'Tis the Season!
Spending Christmas in
London? Check out Pg. 38 for
a surprise!

PIPELINE

Flip through Pg. 19-36
to read about the
opportunities you can take
up in this coming summer.



Join Us The Pipeline

In addition to the writers, this Pipeline Issue is brought to you by...



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WHY JOIN US?

- **Flexible commitment** (ad-hoc or termly)
- Develop **teamwork skills**
- **Interview academic staffs, students and alumni!**

You can **contribute in many ways!** We're open to **photographers**, graphic designer, academic writers & interviewers, lifestyle writers and other roles!

Interested? Email Colleen at chw20@ic.ac.uk !

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Editor's Note

Hello again!

I hope everyone is settling in well into autumn term. **We've received such great feedback on our past 2 issues (the Freshers' Issue & the Autumn Issue), and I want to thank my team for making it all possible!** Thank you to **Ari** for her creativity - she's done a fantastic job with the cover page photo edits and most of the design & aesthetics. **Eylul** and **Bhargavi**, whose proofreading and editing skills made the articles easy for everyone to read. Last but not least, **Kemi** for her entertaining puzzles!

Santa came early this year with our special Christmas Issue! This issue came about as many 4th years were wondering what to do after they graduate. Thus, we asked **Cleo and Ronny** to write articles to help anyone in this course (including the MSc. students!), **plan their career journey** (Pg. 7) and to consider the possibility of doing a PhD (Pg.15). **Silvia Favero, a 3rd year PhD student** has also shared how she navigated going from her **4th Year UG to a PhD** in this department (Pg. 11).

With these articles in mind, it was clear that this issue has a strong Careers Guide theme to it and this inspired **"The Internship" section (Pg.19)**. We've gathered students to write about each of their experiences that added up to **7 different sectors** that you could explore! Read through these articles to **broaden your horizons**, but also keep in mind that **everyone has their own path**.



So, where's the Christmas in this Christmas Issue? We know that Christmas is undoubtedly the best time to explore London, and Ajai Gill and I wrote a special **"Christmas in London" section for you (Pg.38)!** **ChemEngSoc** is also going strong with their in-person events (woohoo to those who came for the pub crawl and bowling event!), so be sure to check the **events calendar (Pg.37)!** With **Christmas break** around the corner, try **baking some warm cinnamon rolls with Ari's recipe (Pg.41)** or sign up for our annual **photo competition to win £150 worth of Amazon vouchers** and a chance for your photo to be featured on the **cover page** of the next Pipeline Issue!

I hope you enjoy reading this issue, it has been incredibly rewarding for me to see it put together from start to end. **This is truly the Pipeline team's Christmas gift to everyone.**

Vice Chair Note



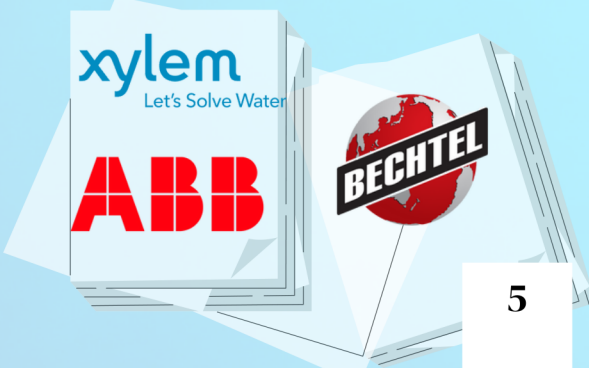
Hello everyone!

The autumn term and application season are in full swing, and I am hoping that work and stress levels are manageable. Jonathan, Bide, Xuanyong and I have been delighted to see so many of you at our career events and workshops. We want to thank you for coming along and supporting us.

The external relations team is working towards bringing you the opportunity to interact with a range of companies from different industries. We aim to play a part in your career development and bring you as many internship opportunities and graduate roles options as possible. Throughout November, you can come have a chat about engineering, construction and project management with Bechtel and learn about their various graduate opportunities. ABB, who collaborated with the department in the construction of the carbon capture pilot plant, is also organising a career's presentation and a mock interview workshop!



We are also re-introducing our sustainability week as a sustainability month! We have Xylem, a company dedicated to solving the world's most challenging water issues, coming in with a career's talk, Walk for Water event and most excitingly: a Hackathon! The Hackathon will focus on solving real water problems and bringing innovation to the sector, with a chance of winning a great prize! In addition to Xylem, Recycling Technologies are back! With Recycling Technologies, join to learn about opportunities in chemical recycling of plastics and see how you can contribute to a circular economy.



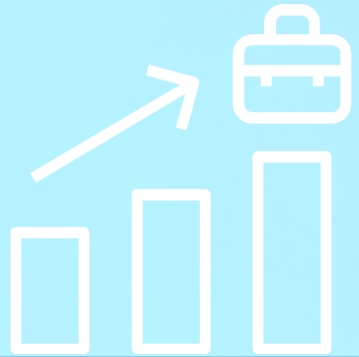
Sign up to the mailing list, so you don't miss out on career events!



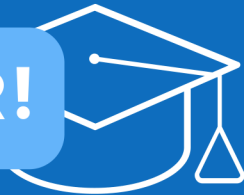
If there are certain sectors, industries, and opportunities that you would want to see brought in, do come chat with me, or shoot me an email.

I wish you the best in all your endeavours and hope that we have made a positive difference in your career journey.

Throughout December and the next term, we will be bringing to you the **Small-Medium Enterprises Event, career opportunities and a chance to grow and develop professionally.** We know 2nd term gets hard and deep in deadlines, so make sure to join our events now so you don't miss the Small-Medium Enterprises Event, & **career and networking opportunities.**



MEET THE MSC OFFICER!



Hidde Kolmeijer
MSc. Officer

It is my role to **make sure this year's MSc. cohort can experience life** at Imperial outside of modules and research projects **to the fullest.**

About me:

I did my undergraduate degree in Zürich, but I am originally from the Netherlands. I love playing tennis and seeing Holland (hopefully) win the World Cup this year.

HOW TO START PLANNING YOUR CAREER JOURNEY

THE EARLIER YOU THINK ABOUT YOUR CAREER JOURNEY,
THE MORE OPPORTUNITIES YOU WILL HAVE
TO EXPLORE DIFFERENT OPTIONS.

PhD

INDUSTRY

UROP IN
1st/2nd YEAR

INTERNSHIPS IN
2nd/3rd YEAR

Most of you will have achieved top marks at A-levels but may not yet have decided between getting a job post-graduation or continuing your studies. **If you think you may like to do a PhD in the future, you can consider doing a UROP in the summer of year 1 or 2.** You will likely either love it or hate it. If it's the former, you can continue to do a UROP or IROP in the following summer, hone your research skills

and get a taste of more research topics. This experience will help you decide what you'd like to specialise in and shape your personal statement for PhD applications **(have a look at Dr. Pini's article on this topic at page 15).** If it's the latter, years 2 and 3 are the best for looking for **internships.** Don't be disappointed if you don't get one in year 2 as **a lot of companies look for penultimate year students.**



An internship can help you decide in which sector you'd like to work. **Internship applications can take a lot of your time and need good planning:** finance and consulting applications open during the summer and typically close in September/October, while engineering internships open later, sometimes well into the Spring term. If you are interested in a particular sector but only know of the big companies, **you can look at the full membership of that industry's association.** For example, if you want to work in pharma, you can look up the list of member companies of the Association of the British Pharmaceutical industry. **Imperial also has a lot of start-ups,** some of which are based at the White City Incubator space. Doing an internship at a start-up can be particularly insightful and rewarding as **you would likely meet everyone from the lab technicians to the CTO.**



Every internship application is unique. Looking at the company website, learning about their **ethos, values and priorities** can help you **tailor your answers** on the application form to the company profile. **Answers should be evidence-based,** so use your group-work experience and any extracurricular activities to corroborate your answers. Talk about **what you have learnt from specific experiences and how you have improved your technical and soft skills as a result.**





Beyond summer work, the choice of **electives** and final year research project **can help you showcase your interest** in a particular industry or research area. In addition to specialising, my advice would be to also choose at least a couple of electives that deal with **engineering grand challenges**, such as the transition to net zero emissions. Even if you have come to the realisation that engineering is not for you, **being able to talk about global challenges at an interview can give you an edge**. Plus, don't forget that the route to a job in, for example, management consulting may be through their engineering function.

If you are a MSc student at our department, you can follow the same principles in choosing your electives and research group. Those of you specialising in Biotechnology, Process Systems Engineering or Materials Engineering, will probably already have a keen interest in these sectors. If you are on the main programme, you will have a broad choice of research topics. Although you will not be able to undertake a summer internship, you will benefit from spending the summer months doing research and working closely with PhD and post-doctoral researchers. The technical and interpersonal skills you will develop during this long project will serve you well in job (or PhD) applications.



In this journey, you can get help with your CV and cover letters from the **Career Service**, but also your **personal tutors** and **research project supervisors**. You can meet and get advice from **alumni at the careers fair** and the **various talks organised by ChemEngSoc**. Academic staff will also be able to put you in touch with alumni who can talk you through the application and interview process, **so don't hesitate to reach out to us!**



Dr. Ronny Pini

PhD Admission tutor

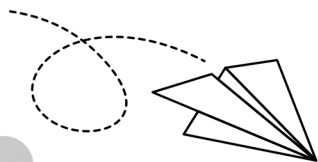


Prof. Cleo Kontoravdi

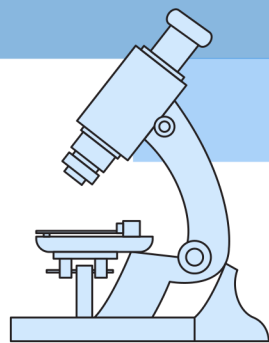
Director of
Postgraduate Studies



From UG



To PhD



3rd Year PhD

Silvia Favero,

Hello, I'm Silvia and I'm a 3rd year PhD student in ChemEng. I completed my undergraduate studies in this very same department.

If you're wondering whether a PhD is the right choice for you, you've come to the right place. In this article, I will be sharing about what I like most about doing a PhD and some of the challenges that I have encountered. I hope my sharing will help you in your decision-making process.

Choosing to do a PhD

4th year can be a very confusing time and choosing a career is never an easy decision to make. It is okay to still be unsure about your future; **but if you are considering doing a PhD, my advice is to do a UROP and talk to as many PhD students as you can in the UROP group.**

The 4th year research project will give you an idea of research at Imperial, but your time is extremely limited, and the pressure to write a report at the end means that you can only follow tested and known procedures. On the contrary, in undertaking a UROP, you will have more time to explore the topic in greater detail and you have more freedom to come up with your own ideas and try things out, which is much closer to what you would do as a PhD student! **I also suggest reading about the research areas you are interested in and selecting your research projects carefully,** as it might become your PhD.

Personally, I decided to do a PhD because I enjoyed both the UROP and the research project experience. I also didn't feel ready to leave the academic environment and I wasn't sure what I would want to do if I decided to go into industry. The thought of being able to develop and test an idea from start to end was also a big drive for me to do a PhD.

The Best Parts of doing a PhD

All in all, I would say that doing a PhD is an amazing and unique experience, it can be tough, but it is also extremely rewarding. It gives you a diversity of experiences (from teaching, to presenting, to working in the lab) and freedom to figure out what you like and pursue it.



1. Every day is different

What I like the most about doing a PhD is definitely the variety. Research itself is quite multifaceted already, as one day you can be doing **a literature research**, the next you might be **planning your experiments**, then **working in the lab**, **analysing your data** and trying to make sense of it. But a PhD is not only research, for instance, you also get to communicate your results to the community by **presenting at conferences**. You can **teach as a GTA (Graduate Teaching Assistant)** and even help shape new projects or courses. You can also inspire new generations by **taking part in outreach events**.

2. Gaining different skills

As a natural effect of the variety of activities that you can take part in during your PhD, you will develop a wide range of skills: from learning to **communicate your research** to your peers or to the wider public, to improving **collaboration and mentorship**, developing **teaching skills** and gaining **research-specific** competences. A graph recently published in eLife gives you an idea of all the benefits of doing a PhD.



Bernery et al. (2022) Research Culture: Highlighting the positive aspects of being a PhD student, *eLife* 11:e81075. <https://elifesciences.org/articles/81075>

3. Owning your project

Another aspect I love about academia is that **you see a project developing from start to end**. You come up with your own ideas, you are the one testing them in the laboratory, you analyse the data, draw conclusions and modify your assumptions and future experiments accordingly. Even though many collaborators will probably be involved in the process, **you get to be a part of every step and it feels incredibly rewarding to finally put it all together** in a paper.

4. The environment

I can only speak for my personal experience, but I found **the academic environment uniquely supportive and welcoming**. Most researchers I have met are in this field for a genuine interest in science and they love what they do. Collaboration is also especially important in academia, so you will find that everyone is very keen to share their knowledge, help you and perhaps start collaborations. You also get a unique flexibility and freedom to organize your time, which, I believe, is priceless.

Challenges & Advice

1. Before choosing a research group, talk to as many group members as you can

Every group and every supervisor are different. **Finding a good fit** personality-wise can be as important as choosing a research topic you enjoy. In some groups you are expected to be highly independent and thus, have more freedom, while in others, there will be more guidance and support. **Ask yourself in which environment would you work better**, then talk to as many group members as possible to know more about their experiences and the group dynamics.

2. It's normal to feel lost at times

Doing a PhD can be extremely rewarding and at times fun, but it is nonetheless challenging. It requires a lot of independent work and patience as **things will surely go wrong, (that's just how research is)**. It will be frustrating at times, and you might feel lost. If this happens to you, you should know that it's normal. Everyone goes through it and things tend to work out eventually. Most importantly, remember that you have your supervisor and your colleagues to support you.

Don't be afraid of voicing your uncertainty, because you will find out that **doubting your work at times is normal and I would say even essential in good research**. Also remember that the only fact that you obtained a PhD scholarship means **you are good enough to be here**. If you are ever in doubt, think about the first experiment you did; you will be amazed at how differently you would do it now because of how much you've learned between then and now.

3. Your free time is as important as your work

This will sound obvious, but I can't stress how important it is to keep a good work-life balance. It can be extremely easy to get caught up in some experiments, and it can be tempting to stay in university longer than you should or to even come on the weekends. The 3 years of a PhD programme are long, and you will burn out if you don't keep a good work-life balance (I'm talking out of experience here). **Cultivate your hobbies and force yourself to take breaks, this is particularly important when things don't go as planned.**

**Dr.Pini &
Prof. Kontoravdi**
presents



THE PhD APPLICATION

In this short piece, we aim to describe the application process for the PhD programme in Chemical Engineering at Imperial College London. In doing so, we will cover the key aspects that a prospective PhD student should consider when applying for a PhD. We hope that the article will also help you find your answer to the question: **“is a PhD worth it?”**

The PhD programme in Chemical Engineering at Imperial College London is a **3-4-year degree**. In undertaking the PhD project, you will join one of the many academic research groups and work in close collaboration with your academic supervisor. It is worth noting that in Chemical Engineering **interdisciplinary projects are becoming the rule rather than being the exception**, meaning that many PhD students have two academic supervisors with complementary expertise.

*One of the first things that you will have to consider when applying to the PhD programme is the **research area in which you are most interested.***

In our department, we offer PhD projects on a **wide range of topics**, including projects associated with the **emerging themes in industry** (e.g., the energy transition, biotechnology, personalised healthcare) and others that fit within the many **core subjects** of Chemical Engineering (e.g., transport processes, reaction engineering, separations). A description of our research themes can be found on our website [1]. The PhD is an introduction to the world of **independent research** and **represents a unique opportunity to become an expert in your chosen field of research.** In this endeavour, you will receive advanced and bespoke training on research methods and techniques. If your project entails experimentation, you will also acquire substantial laboratory experience. By analogy, for a computational project, you will become acquainted with mathematical analysis as well as advanced modelling approaches and programming languages.

Reaching out to prospective PhD supervisors is an important step of the application process.

In addition to obtaining more details on the PhD project, a meeting with the PhD supervisor allows you discussing their role in supporting your PhD journey and your development. To gain more insight into their supervision style and research group, it is often a good idea to **ask them to put you in contact with some of their current PhD students.** Keep in mind that you will spend 3-4 years in this research group – collaborating not only with your supervisor(s), but also PhD students and researchers in their group. During the degree you will meet others in your field through both national and international workshops and conferences. **The network of connections that you will create may become very useful one day.**



*In addition to having an idea about your preferred research area, you should also **consider the level of industry experience that you would like to gain during the PhD.***

Some PhD projects are included in so-called **Centre for Doctoral Training (CDT) programmes**, which offer PhD studentships in a specific and high-demand research area. Because a CDT is formed by a group of industry and university partners, students are **often given the opportunity to undertake a placement at the industrial or an academic collaborator's lab.** Another industry-focused PhD studentship is the **Industrial CASE (ICASE)**. Here, the industrial partner takes the lead in arranging a project with an academic partner of their choice and **will host the PhD student at their facilities for a period of at least three months.**



These studentships are funded by **UKRI** and are open to both home and international students, albeit UKRI limits the proportion of international students appointed each year. In our department, we also offer PhD scholarships that do not necessarily entail a collaboration with industry. These are the PhD scholarships in Chemical Engineering (**open to all applicants irrespective of their fee status**) and the UKRI PhD studentships in Chemical Engineering (**open to all Home applicants**).



The PhD degree is essential for a career in academia. Yet, it is very useful for other types of employment too - not necessarily in engineering or science.

A PhD programme is in fact not only about research, but it provides an opportunity to gain a wide range of additional skills.

It is a 3-4 year programme that requires a level of commitment and planning unlike many job opportunities. After completion of the PhD degree, you will have solid evidence that **you have been trained in both written and spoken communication**. PhD students are often given the opportunity to work as **Graduate Teaching Assistant (GTA)** to get additional teaching experience.

To be considered for the PhD programme in our department,

you need to have graduated with (or heading for) a 1st or an Upper second-class degree. The documents that you need to provide as part of your application are: a **CV**, the **academic transcript**, a **personal statement**, and the details of **at least two referees**. In preparing these documents, think about the aspects that we have discussed above. A strong application demonstrates interest in a specific research field and its broader applications. A good way to communicate this is through your CV and personal statement. Here, you can list relevant academic and extra-curricular experience, including internships and placements, and highlight when these have contributed to your research experience (such as UROP placements).



One of the key things to note down are the **application deadlines!** For the scholarships in Chemical Engineering (October 2023 entry), the deadlines are October 31, 2022 and December 31, 2022. You can find more information on the application process on our dedicated webpage, including a list of all the current PhD opportunities **[2]!**

While here we have made specific reference to the application process in our department, we are equally happy to help you apply for a PhD position elsewhere. So, if a PhD is something that interests you, **do speak to your personal tutor, the admission tutor (Dr. Ronny Pini) or the Director of Postgraduate Studies (Prof. Cleo Kontoravdi) for further guidance.**

Mentioned Websites:

[1] <https://www.imperial.ac.uk/chemical-engineering/research/research-themes/>

[2] <https://www.imperial.ac.uk/chemical-engineering/research/phd-opportunities/>



The Internship

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UROP

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Management Consulting

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Data Science

Energy Consulting
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Petrochemicals
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Consumer
Goods
Pg. 35

Are you unsure of which internship you would like to apply for? Doubts about the whole application process? In this Pipeline Issue, we cover what it is like to work in 7 diverse sectors (including application tips as well) from students in the department.



Exxon Internship Experience



*I am currently a third year Chemical Engineering student, and I recently completed a summer internship at **ExxonMobil**. This was an eight-week internship based at the **Fawley Refinery and Petrochemical Complex** near Southampton.*

The application process was straightforward compared to other companies. Following the initial application form, I was asked to complete a **behavioural assessment**. A few months later, I was invited to an interview. This was over Zoom and I was interviewed by two experienced engineers. The first 20 minutes consisted of **competency-based** questions and the remaining 40 minutes were purely **technical**. The technical part required you to **apply chemical engineering concepts to unfamiliar situations**. I thought I completely messed up my interview but a few weeks later I received a call offering me a place on the internship!

The refinery consists of several technical teams such as Distillation and Lubes. I was stationed within the Offsites team who oversee all-things tanks. I was given a project to work on alongside a fellow intern which aimed to address the increased difficulty of storing light slop, a volatile off-grade hydrocarbon produced during unit transients. Limited storage capacity along with its high volatility makes it challenging to store safely and economically. I liked how this was **a real and serious issue that the refinery was facing** and all the employees I spoke to were intrigued to find out what ideas we would come up with by the end of the internship.



My project **required a lot of creativity** as opposed to the more data driven projects other interns were working on. **It relied heavily on engineering judgment**, and I rarely used any complicated equations or sophisticated models that my degree teaches. I also **worked with many experienced professionals** such as process safety engineers, process operators and economists.



Everyone was **very friendly and always happy to help us**. At the end, we were required to **present our project to a room full of experienced engineers and managers**. Throughout the course of the internship, I felt that I **massively improved many soft skills** such as communication and teamwork whilst also testing my engineering knowledge.

All in all, I really enjoyed my time at ExxonMobil. It was a **well-structured programme and provided great insight** into the oil and gas industry as well as life as an engineer. If you have any questions about my internship, **please don't hesitate to get in touch!**



BY AJAI GILL, 3RD YEAR UG

Energy Research & Consulting Internship



*During the summers of 2021 and 2022, I undertook an internship at **Wood Mackenzie, an energy research and consulting company.** During my time, I worked in the chemicals and carbon teams on **modelling carbon dioxide emissions from chemical plants.***

I found the job online **via Indeed** and after seeing that they were accepting first years I decided to apply. After submitting my CV, I was asked to take a **pre-recorded video interview.** I used **Shortlist.Me** from the careers service to practice and **I would highly recommend everyone to use it as most internships now have some form of pre-recorded video interview.** After passing this round I was invited to an online interview where I was quizzed on my **interest in the energy market and data analysis skills.**

The interview itself was very relaxed and was also **designed to see how I would work in a large team environment.** During my time as an intern, I was given a lot of **responsibility** and **most of my day was spent talking to different colleagues across multiple time zones,** trying to find the right information for the problem of the day. Working in a large company, I was also exposed to other areas that you'd never usually come across at university.

I had to meet regularly with the sales team to look at the **commercial applications** of my models and **how best clients would want to receive this information**. I also got to see what it was like talking to **external clients, from not only the chemical industry** but in other areas like fashion and how they were going to use my work. Working in an office is also very different to studying at university. You are constantly learning new things and **you are your own examiner**, asking for feedback to improve your work.



I was also lucky enough to work in a skyscraper in central London even though I am afraid of heights! There were **plenty of social events** such as after-work drinks, free pizza for lunch every Tuesday and unlimited ice cream. Yum! This created a **friendly atmosphere** and I ended up finding work less stressful and more fun as a result. I'd encourage anyone who wants to use their chemical engineering knowledge in a more **relaxed office environment**, rather than wearing a hard hat all day, to seriously consider the energy industry. I hope anyone reading this is successful in their internship search. **Please do contact me if you want to learn more about the energy industry. Good luck!**



UROOP Experience

Read more about Katya's
experience and tips to
succeed in your application



As any veteran ChemEng student will attest, it's a tough gig looking for work experience in the summer between 2nd and 3rd year. Most companies are only looking to hire penultimate year students, while still expecting you to have done something worthwhile with your summer the year before. It's a pretty unfair double standard.

In lieu of industry experience, lots of second-going-on-third years choose to take advantage of the college's UROP scheme during that summer. **A chance to do potentially really cool research with some of the department's leading academics is a fantastic prospect in and of itself.** The CV points are a great bonus! Even more importantly in my opinion, **it's a great way to determine whether research is something that you're interested in long-term.**

Many of us will go into industry after graduation, that's true, or turn ourselves over to the dreaded F-word (finance). The option to go into further study (e.g., a PhD) is definitely less popular in engineering than it is among our scientist friends, but it is still worth every consideration. If you've got even a hint of curiosity about what full-time research is like, then **a UROP is a perfect way to get the desired exposure.**

Yekaterina Longinova, 4th Year UG





I followed exactly this path in the summer after my second year, pursuing a research opportunity under Dr. Ronny Pini, who had been my Fluid Mechanics II lecturer that year (a real shoutout to FMII by the way, that was a top-tier module!) Summer 2021 was the true “wow, life might actually be going back to normal soon, but not yet” period, so my UROP was entirely computational (and therefore remote). I was apprehensive about this at first, but it turned out to be ideal as it gave me freedom to do my work on my own schedule and in between, enjoy summer in the city.

Despite being fully remote, I had **consistent contact** with my PhD student supervisor, Adam, twice a week, as well as a weekly check-in with Ronny, **where we'd discuss the roadmap of the project, the significance of my results, and troubleshoot the issues I'd faced that week.** I was treated like a true member of the lab, actively participating in discussions as well as decisions regarding the direction to continue the work in. The experience was rewarding in every way.



Every UROP project will be different in its scope and application, but my UROP put me at the forefront of my chosen field. The questions I was investigating concerned an understudied area, meaning my results were very nearly the first of their kind. At the time, this was as terrifying as it was exciting. After nearly 15 years of an educational setting, having no “answer sheet” to compare results to was unnerving. I had to trust fully in my own knowledge and the guidance of my supervisors. This, however, was what made the UROP so exciting. **The feeling of being on the cutting edge of contemporary engineering and the possibility of contributing something worthwhile to the field were unbelievably motivating.**



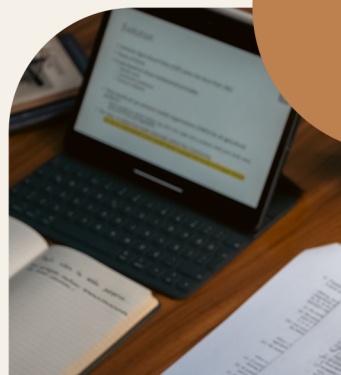
So, how do you get a UROP that you'll enjoy as much as I enjoyed mine? Here are my top four tips:

1. Start looking early

Don't treat UROPs as a "just in case" option. Not only do lecturers hate that, but it also means that you might not actually do any research you're interested in because you started looking too late. If you've decided to do a UROP, start looking for one early. **Applications usually close in February**, and if you're looking to apply for a research bursary (I did!), you'll have preparatory work to do.

2. Do your research!

Make sure to really understand what different people in the department do before asking to do a UROP with them. Dr. Pini's lab does research that's very applicable to a subsection of the chemical engineering industry that I'm passionate about, so I immediately knew that I would enjoy a UROP in his lab. If it helps, **reach out to lecturers ahead of time and ask them to tell you about their research.** Most of them will be more than happy to!





3. Consider other academics

Consider academics outside the department. **The wider college is full of people doing cool research.** If you feel that you'd be more interested to do a UROP with someone not ChemEng-specific, then do!



4. Choose something you're interested in

Choose something you're interested in! There's nothing worse than being bored at work. **Choose something you know (or at least think) you'll enjoy** and you're set for the summer!

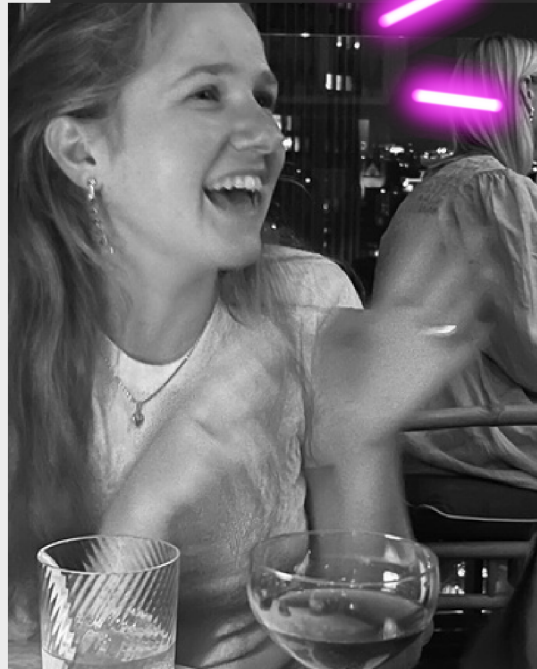


Management Consulting Internship

I. Application

The application started with a **CV, cover letter and digital assessment**, which tested on **critical thinking, decision making, situational awareness and strategy implementation**. About one month later, I received an invitation for interviews. There were two rounds, each consisting of 3 interviews. I was also assigned a buddy, who was a recent hire, and they had helped me incredibly throughout the application process!

An interview at McKinsey starts with a **personal experience question**, where you are asked to talk for 15 minutes about a situation **showing entrepreneurial drive, inclusive leadership or overcoming personal challenges**. The other 45 minutes is a **case study**, where you are given a scenario describing a problem of a company and must try to problem-solve your way to the solution.



MARIEKE DE BOCK, 4TH YEAR UG

Case studies require a lot of practice, so talk to your peers and find a buddy whom you can do live cases with! There is an overload of information to be found online regarding this, but I would recommend **taking an MBA casebook, reading the prompt, hiding the suggested framework, and then writing down how you would address the problem** (and repeat this over and over again for different casebooks).

2. What does the work include and how is it different from uni life?

Consultancies get asked to investigate specific tasks or developments a bit deeper than traditional companies usually can do. This can range from a forecast on demand of some type of material, to market sizing an industry, or even setting up the structure of an entirely new business model. To do so, they conduct expert interviews, literature reviews or use huge data bases to analyse the upcoming trends. There is a **lot of problem-solving involved on a day-to-day basis**, to figure out with your team how to approach specific tasks and get to the answer. These results are then presented regularly to the client and feedback is given on how to proceed.

It is different to university life as the projects are often very short (typically 6 weeks) and the study has usually never been done before. You always work in a team, which also changes constantly, something which Imperial has perfectly prepared you for! You need to be able to make accurate assumptions and sense-check your outcomes, another ChemEng feature.



3. What was unexpected

It was slightly surprising to find out how easily approachable everyone at the firm was. I had several **coffee chats** to meet people, to hear about their story, or just because their background or work interested me. This was certainly not what I had expected from such an internationally known consulting firm!



YUYANG CEN, 4th YEAR UG

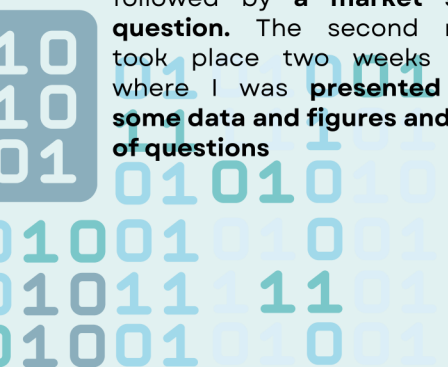
Data Science Internship

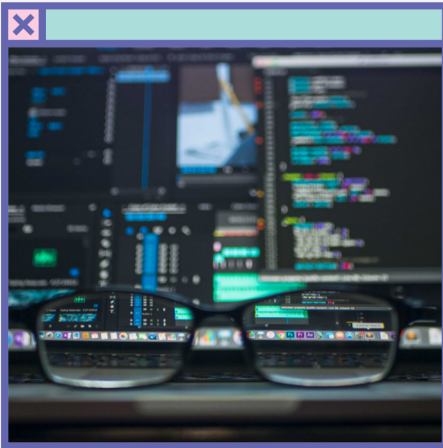


*Last summer, I interned as a **data scientist and consultant at Ekimetrics**. I worked on two projects: a **client-facing project** mainly focused on marketing Mix Optimisation and an **innovation project** which involved working with machine learning in the context of customer centricity.*

The application process was straightforward. I found the job listing on **JobsLive** and after doing some research online, I discovered that I quite liked what they were doing and submitted my CV and cover letter. If you are not sure of which companies to apply to like I was, check the list of vacancies occasionally to see if anything piques your interest. Next, I was invited to two rounds of interviews. The first round was a **short discussion regarding my CV and my experience working with data science**. It was followed by a **market sizing question**. The second round took place two weeks later, where I was **presented with some data and figures and a list of questions**

that I had to answer. If you are comfortable with numbers, you would've had no problems. Overall, the entire process took less than a month. It was enjoyable, and I appreciated the feedback given after each round. As an intern, I was surprised with the amount of **responsibility and autonomy** that I was granted. After a **brief week of training, my supervisor tasked me with work fit for a full-time employee**. I was also surprised by how **hands-on** I was allowed to be, as I was initially under the impression that I would be doing basic things, like being best friends with Ctrl+C and Ctrl+V and getting coffee for the full-timers.

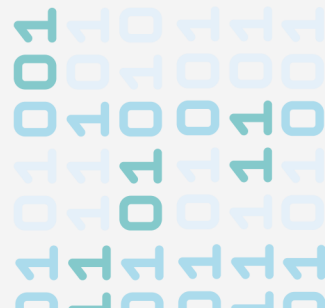




Eventually I **sat in on client meetings**. I thought that was cool.

While some degree of basic respect is expected, as it should be, everyone was **very friendly**, and they were **more than willing to share their experiences and expertise with me**.

Previously, I have only worked in Singapore, where people are more uptight and office culture is not the best (I am understating it), so this came as a pleasant surprise. If you are interested in data science and digital consulting, I highly encourage you to apply! **If anyone has any questions, please feel free to contact me as well**. All the best in your internship search!



Most of us tend to apply to big companies and small medium sized businesses, but what about a start up? Find out if this is right for you in Sid's article.

SID HALDER, 4TH YEAR UG





Working in a Start-up

Hi all, I'm Sid, a final year MEng Chemical Engineering student. I was fortunate enough to do an internship in a start-up this summer and wanted to talk more about it if anyone is interested in going down the same route.

Working for a start-up can provide you with new opportunities entirely different to those available to you at bigger firms as a student/graduate, especially if you want to get into a specific field of interest. Not many people consider applying to start-ups initially, but I think it is an option that every student should at least explore.

Applying for a role in a start-up is usually done through a speculative application or if you are lucky enough, asking the right connections! Professor Magda Titirici, my personal tutor, was a great help with regards to this and always pointed me in the right direction. **After doing a UROP** with her research group on electrocatalysis for hydrogen fuel cells and electrolyzers last summer, **I knew quite confidently that I was passionate about a green hydrogen future.** To expand my knowledge on current hydrogen technologies and infrastructure, I attended the **17th Hydrogen & Fuel Cell**



conference in Birmingham last November. Magda once came again to the rescue as she was happy to reimburse me for the entry and travel costs, which were pretty hefty. It was honestly such a cool experience seeing all the forerunners of the industry talking about their contributions, both big and small firms. It was quite scary at first as everyone there has a tonne of experience, but I learned so much just by being there and listening to the speakers. I also managed to network with some interesting smaller companies who were happy for me to reach out to them later about internship opportunities. Conferences can be daunting, **but I genuinely think that they are one of the best ways to make connections and learn about a specific subject.**




Time for the application stuff!

Using the connections I made earlier, I sent out speculative applications (**really good advice on the careers service page about this**) via email and waited for something to bite and eventually something did. A connection of Magda's that I reached out to had very recently started a start-up that manufactures hydrogen electrolyzers, Oort Energy.

After going through my CV and a super chill interview at a café, they were happy to take me on for the summer as a research intern; I was even able to negotiate my salary. Initially the plan was to do experimental work developing catalysts in the lab but just before I started,





I was informed that this was not possible mainly because the company had just moved to a new base of operations. **This was when I realised how dynamic and volatile the start-up space is, everything is always changing.** It wasn't too much of an issue as I was able to work online instead, researching green ammonia production using the company's electrolyzers. What I found intriguing was that **the company was happy to share confidential technical information on their products** as it makes any models I develop so much more representative - I really liked this aspect and felt that **I was truly doing work that the company would find valuable.**

There were only 2 other people in the company besides me - the CEO and the COO. Therefore I 'unofficially' called myself the CIO, chief intern officer 😊 **Having such a small group made communication so much easier and I got to know my colleagues really well.** We were able to catchup every other day to just chat and go thorough any questions I had. Most of the project consisted of independent work, which was obviously challenging at times, but I think ChemEng prepares you well enough for that. The timings were super flexible as well, I could basically work whenever I wanted to. I think the point is that at a start-up you are already interested, motivated and have a good background in the work you are doing, so actually doing it is fun and rewarding. Thank you for taking the time to read my start-up experience. **If anyone reading this needs help or advice regarding applications, I am always happy to help out.**



My Internship at P&G

I'm Karen, a 4th year student who interned in P&G this summer.

Application process:

The application process at P&G is straightforward. After submitting your application, you do a **personality test then a gamified test**. Then, there are **two or three rounds of interviews depending on the function you applied to**. I did my application during COVID so all the stages were virtual, but **there might be an in-person assessment centre this year**.

What does the work include and how is it different from university?

I interned in the **Analytics and Insights function in the Category Operations Team as a business consultant/analyst**. My work involved **combining data analytics and consumer insights to answer business questions and identify growth opportunities, to make recommendations and guide the decision-making processes of the head management**. I used PowerBI and KNIME (and of course the usual PowerPoint and Excel) for my day-to-day work.

For me, there are two main differences between industry and university. **University is very orderly; work is not**. There are many uncontrollable variables, able to change the trajectory of your plans. Stakeholders are involved as well and you need to balance their different interests. Every very single decision you make impacts the company and it terrified me at first! The second different thing is **diversity**. At Imperial, people have similar personalities. But at P&G, I encountered a wide and had many interesting conversations with different people.

KAREN KA YI LING, 4TH YEAR UG



What was unexpected?

The amount of **responsibility** I was given was astounding. I got to interact with not only stakeholders across different functions, **but also senior directors across countries**. I really liked how much they cared about **personal development** as well. Everyone at P&G was so nice and we had a lot of **amazing socials** like the barbecue at the director's house, go carting and even a boat! I really enjoyed my time at P&G.



PIPELINE PHOTO

Competition

Our Annual Photo Competition is back!

Send **any photo related to one of the themes** along with a **short description** (50 words max) to chw20@ic.ac.uk

Submissions close on 7 Jan 2023!

Themes:

- 1) Sustainability
- 2) Life & Engineering

Categories:

- 1) Undergraduate
- 2) Postgraduate

Open to all!
Including people with phone cameras!

PRIZE:
£150 worth of Amazon vouchers & Pipeline Spring '23 Cover Page!



TERM 2 EVENTS



ICE SKATING

November 22, 7pm till end

 Somerset House

For all years

Limited tickets available



WINE & CHEESE

November 24, 6pm till end

For 3rd and 4th years + Msc students

Socialize with Professors over wine and cheese!



NEW YEAR'S DINNER

December 9, 6:30pm to 11pm

 The Royal Yacht Club

3 course meal with reception drink included.

Early Bird tickets only £20!

For all ChemEngSoc staff and students

Purchase your tickets at the union shop now!



Christmas in London



5

6

2

3

1

4

"It's the most magical time of the year...."

Ajai and Colleen presents to you **London's best Christmas spots!**

1. Christmas at Kew

📍 **Royal Botanic Gardens, Kew**

From 16 November 2022 to 8 January 2023, experience this **after-dark trail** (4.20pm to 10pm) at London's UNESCO World Heritage Site!

Cost per pax: Off peak £21.50
or Peak £28.00

For more details visit kew.org .



Photo taken from kew.org

Christmas Trees

2.

📍 **St. Pauls**

St Pauls has **arguably the best Christmas Tree in London** as well as some sneaky smaller Christmas trees hidden above!



Photo taken from LightRocket

3.

📍 **Trafalgar Square**

The Trafalgar Square Christmas tree is a **Christmas tree gifted to the people of Britain by Norway each year since 1947**, as a token of gratitude for supporting Norway during the Second World War!



Photo taken from glidebatterseapowerstation.co.uk

4. Riverside Ice Skating

📍 **Glide at Battersea Power Station**

From 11 November 2022 to 8 January 2023, skate in three interconnecting rinks with a spectacular **30ft Christmas tree centrepiece!**

Student tickets start from £11.50!

Find out more on glidebatterseapowerstation.co.uk

Christmas Lights Route

(Approx. 1 Hour to walk, or 4 mins if you're Roger Bannister)

5.

📍 Oxford Street- Regent Street - Carnaby Street- Piccadilly Circus

Starting from Oxford circus head along Regent's Street taking time to see the **famous angels** hanging above, whilst also taking a slight detour to see the lights in Carnaby street. Continue along Regents street and you'll arrive at Piccadilly Circus.



📍 Leicester Square-Christmas Market

Next head towards Leicester Square and pause for a mid-route snack at their **famous Christmas Market**.

6.

📍 Covent Garden

Continue heading straight ahead until you reach Covent Garden, which has a **fake snowfall** on the hour till 7pm! Also if you head inside the market and stop off at Whittard of Chelsea, they have **free hot chocolate and coffee samples** for you to try, yum!

📍 Seven Dials

Lastly head towards Seven Dials where you'll be greeted by what we think are **the most underrated of London's Christmas Lights** to complete your trip.

FOR THE LOVE OF... FOOD



Cinnamon Rolls



BY ARI LUNA RUEDA

What you need for 12 rolls....

For the dough:

- 3 cups of bread flour
- ¼ cup of butter
- ¼ sugar
- 2 tsp of vanilla extract
- 1 whole medium egg
- 1 egg yolk
- 1 quick rise yeast sachet
- ¾ cups of milk
- ¾ tsp of salt

For the filling:

- ¾ cups of brown sugar
- 1 tablespoon of cinnamon
- ½ cup of butter

Tools:

- Bowls
- Cup
- Rolling pin or a wine bottle!
- A knife
- A baking pan

1. Warm the milk in the microwave for around 40 seconds at medium high heat. **The milk should be warm but not hot**, so that you're able to dip your finger and it should be around the same temperature throughout. If you have a thermometer it should **ideally be about 43°C**. Then, **add the quick rise yeast and wait for bubbles to appear**; this means the yeast is being activated.

2. In a bowl, add the **softened butter, vanilla extract, sugar, eggs, milk and yeast mixture with the flour and mix thoroughly**. The dough may be sticky but this is fine!



3. Dust some flour onto a smooth, clean surface and begin to knead your dough. You will need to **knead for about ten minutes or so until the dough is firm and bouncy**, so that it springs back when you press it.



4. In another bowl, oil the sides well and place your dough inside it and cover with a lid or cling film, so that no air can reach the dough. **Leave the dough to rest for about an hour or two.**

5. In the meantime, you can prepare the filling. In a cup, **mix the brown sugar and cinnamon** and **stir until well combined.**

6. After the dough has risen, it should have doubled in size or so. **Using a rolling pin, roll your dough and form a rectangle about ¼ inch thick.**

7. Using a knife, **spread the butter onto the rolled dough** and then add your sugar and cinnamon mixture.



8. **Carefully roll the dough and cut into 1 inch thick rolls.** Now **leave the rolls to rise again** by covering them in a baking tray for about 30 minutes.

9. **Preheat the oven to 160°C and bake for 12-20 minutes.** Depending on your oven settings this time might vary, just make sure to check on them so that they don't burn.



10. Leave to cool down and **enjoy with milk, or on its own!**

CHEMENG BREWSOC



At the **Chemical Engineering Brewing Club**, we welcome all beer lovers who are interested in gaining hands-on experience at brewing and bottling beer!



Follow us on Instagram
[@chemeng_brewsoc](#)
and join our mailing list
to stay informed!



We experiment with mainstream beer recipes and add our own twist in them. As the total process takes about 4 weeks, we brew at least once a month.

If you are interested in learning more about brewing beer (while also enjoying one of our previous brews with some **FREE** pizza), this club is for you!

The Pipeline team wishes you a Merry
Christmas and a Happy new year!

*Get your Digital
Copy here!*



Pipeline AY 2022/23



Imperial College Chemical
Engineering Society



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